

Question 1

What three blocks of addresses are defined by RFC 1918 for private network use? (Choose three.)

- **10.0.0.0/8**
- **172.16.0.0/12**
- **192.168.0.0/16**
- 100.64.0.0/14
- 169.254.0.0/16
- 239.0.0.0/8

Explanation: RFC 1918, Address Allocation for Private Internets, defines three blocks of IPv4 address for private networks that should not be routable on the public Internet.

- 10.0.0.0/8
- 172.16.0.0/12
- 192.168.0.0/16

Question 2

Match each IPv4 address to the appropriate address category. (Not all options are used.)

host address:

- 192.168.100.161/25
- 203.0.113.100/24

network address:

- 10.10.10.128/25
- 172.110.12.64/28

broadcast address:

- 192.168.1.191/26
- 10.0.0.159/27

Question 3

A high school in New York (school A) is using videoconferencing technology to establish student interactions with another high school (school B) in Russia. The videoconferencing is conducted between two end devices through the Internet. The network administrator of school A configures the end device with the IP address 209.165.201.10.

The administrator sends a request for the IP address for the end device in school B and the response is 192.168.25.10. Neither school is using a VPN. The administrator knows immediately that this IP will not work. Why?

- This is a loopback address.
- This is a link-local address.
- **This is a private IP address.**
- There is an IP address conflict.

Explanation: The IP address 192.168.25.10 is an IPv4 private address. This address will not be routed over the Internet, so school A will not be able to reach school B. Because the address is a private one, it can be used freely on an internal network. As long as no two devices on the internal network are assigned the same private IP, there is no IP conflict issue. Devices that are assigned a private IP will need to use NAT in order to communicate over the Internet.

Question 4

A message is sent to all hosts on a remote network. Which type of message is it?

- limited broadcast
- multicast
- **directed broadcast**
- unicast

Explanation: A **directed broadcast** is a message sent to all hosts on a specific network. It is useful for sending a broadcast to all hosts on a non-local network. A **multicast** message is a message sent to a selected group of hosts that are part of a subscribing multicast group. A **limited broadcast** is used for a communication that is limited to the hosts on the local network. A **unicast** message is a message sent from one host to another.

Question 5

A company has a network address of 192.168.1.64 with a subnet mask of 255.255.255.192. The company wants to create two subnetworks that would contain 10 hosts and 18 hosts respectively. Which two networks would achieve that? (Choose two.)

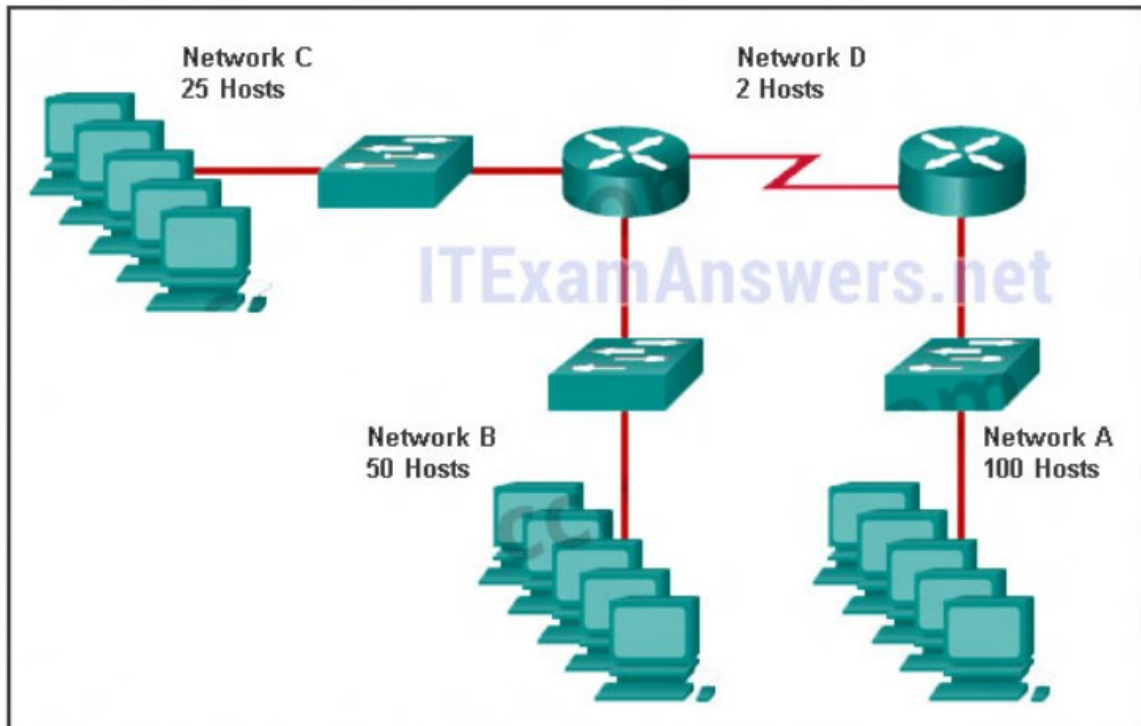
- 192.168.1.16/28

- **192.168.1.64/27**
- 192.168.1.128/27
- **192.168.1.96/28**
- 192.168.1.192/28

Explanation: Subnet **192.168.1.64 /27** has **5 bits** that are allocated for **host addresses** and therefore will be able to support **32 addresses**, but **only 30** valid host IP addresses. Subnet **192.168.1.96/28** has 4 bits for host addresses and will be able to support 16 addresses, but **only 14** valid host IP addresses

Question 6

Refer to the exhibit. Match the network with the correct IP address and prefix that will satisfy the usable host addressing requirements for each network. (Not all options are used.) From right to left, network A has 100 hosts connected to the router on the right. The router on the right is connected via a serial link to the router on the left. The serial link represents network D with 2 hosts. The left router connects network B with 50 hosts and network C with 25 hosts.



Question

Categories:

Network B A

Network D B

Network A C

Network C D

Answer

Options:

B 192.168.0.80/30

A 192.168.0.0/26

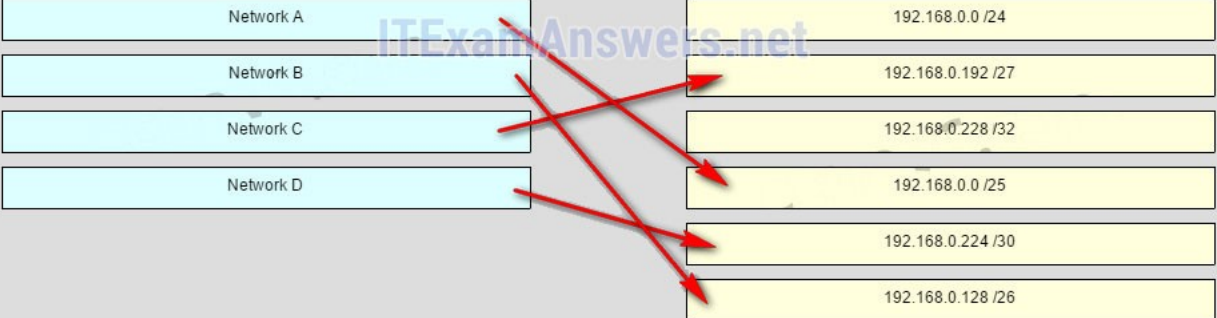
D 192.168.0.96/27

C 192.168.0.128/25

Question as presented:

Refer to the exhibit. Match the network with the correct IP address and prefix that will satisfy the usable host addressing requirements for each network. (Not all options are used.)

Network A	192.168.0.0 /24
Network B	192.168.0.192 /27
Network C	192.168.0.228 /32
Network D	192.168.0.0 /25
	192.168.0.224 /30
	192.168.0.128 /26



Explanation:

Network A needs to use 192.168.0.0 /25 which yields 128 host addresses.

Network B needs to use 192.168.0.128 /26 which yields 64 host addresses.

Network C needs to use 192.168.0.192 /27 which yields 32 host addresses.

Network D needs to use 192.168.0.224 /30 which yields 4 host addresses.

Question 7

How many bits must be borrowed from the host portion of an address to accommodate a router with five connected networks?

- two
- **three**
- four
- five

Explanation: Each network that is directly connected to an interface on a router requires its own subnet. The formula 2^n , where **n** is the **number of bits borrowed**, is used to calculate the available number of subnets when borrowing a specific number of bits.

Question 8

Which address prefix range is reserved for IPv4 multicast?

- 240.0.0.0 – 254.255.255.255
- **224.0.0.0 – 239.255.255.255**

- 169.254.0.0 – 169.254.255.255
- 127.0.0.0 – 127.255.255.255

Explanation: Multicast IPv4 addresses use the reserved class D address range of **224.0.0.0** to **239.255.255.255**.

Question 9

An administrator wants to create four subnetworks from the network address 192.168.1.0/24. What is the network address and subnet mask of the second useable subnet?

- **subnetwork 192.168.1.64
subnet mask 255.255.255.192**
- subnetwork 192.168.1.32
subnet mask 255.255.255.240
- subnetwork 192.168.1.64
subnet mask 255.255.255.240
- subnetwork 192.168.1.128
subnet mask 255.255.255.192
- subnetwork 192.168.1.8
subnet mask 255.255.255.224

Explanation: The number of bits that are borrowed would be two, thus giving a total of 4 useable subnets:

192.168.1.0
192.168.1.64
192.168.1.128
192.168.1.192

Because 2 bits are borrowed, the new subnet mask would be /26 or 255.255.255.192

Question 10

How many host addresses are available on the network 172.16.128.0 with a subnet mask of 255.255.252.0?

- 510
- 512
- **1022**
- 1024
- 2046
- 2048

Explanation: A mask of 255.255.252.0 is equal to a prefix of /22. A /22 prefix provides **22 bits** for the **network portion** and leaves **10 bits** for the **host portion**. The 10 bits in the host portion will provide 1022 usable IP addresses ($2^{10} - 2 = 1022$).

Question 11

How many host addresses are available on the 192.168.10.128/26 network?

- 30
- 32
- 60
- 62
- 64

Explanation: A /26 prefix gives 6 host bits, which provides a total of 64 addresses, because $2^6 = 64$. Subtracting the network and broadcast addresses leaves 62 usable host addresses.

Question 12

Match the IPv6 address with the IPv6 address type. (Not all options are used.)

Categories:

2001:DB8::BAF:3F57:FE94 A

FF02::1 B

::1 C

FF02::1:FFAE:F85F D

multicast

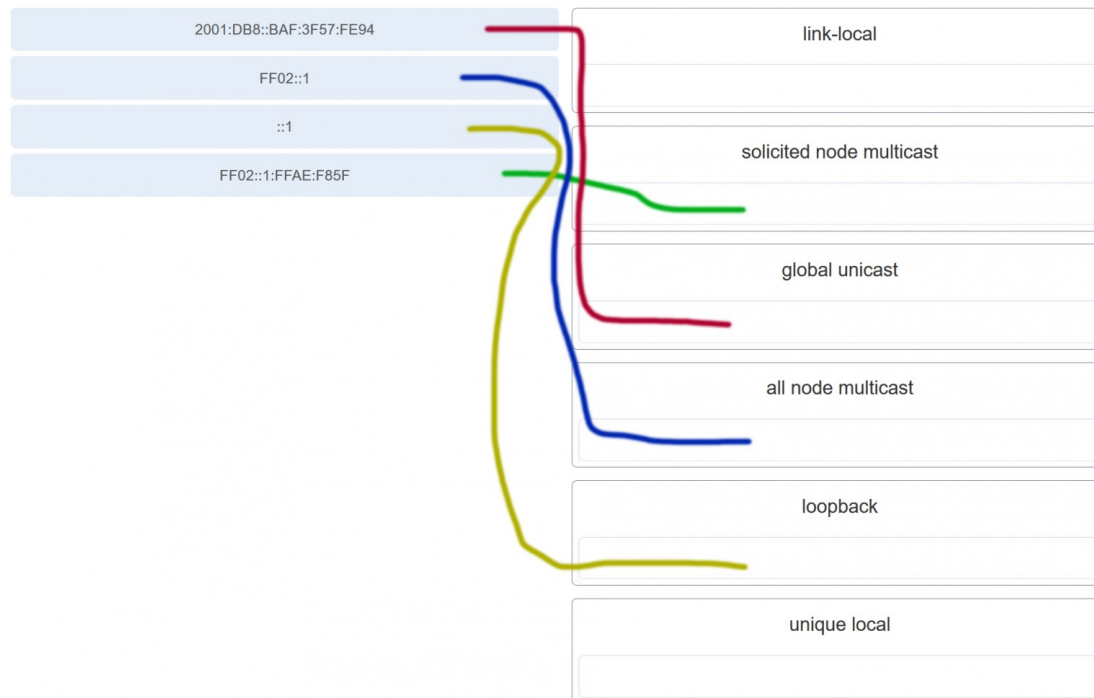
Options:

loopback

global unicast

all node multicast

solicited node



Explanation:

FF02::1:FFAE:F85F is a **solicited node multicast** address.

2001:DB8::BAF:3F57:FE94 is a **global unicast address**.

FF02::1 is the **all node multicast** address. Packets sent to this address will be received by all IPv6 hosts on the local link.

::1 is the IPv6 **loopback address**.

There are no examples of link local or unique local addresses provided.

Question 13

An IPv6 enabled device sends a data packet with the destination address of **FF02::1**. What is the target of this packet?

- all IPv6 DHCP servers
- **all IPv6 enabled nodes on the local link**
- all IPv6 configured routers on the local link
- all IPv6 configured routers across the network

Other case:

- the one IPv6 device on the link that has been uniquely configured with this address
- **all IPv6 enabled devices on the local link or network**
- only IPv6 DHCP servers
- only IPv6 configured routers

Explanation: FF02::1 is the all-nodes multicast group within the scope of the local link. A packet with this destination address is received and processed by all IPv6-enabled interfaces.

Question 14

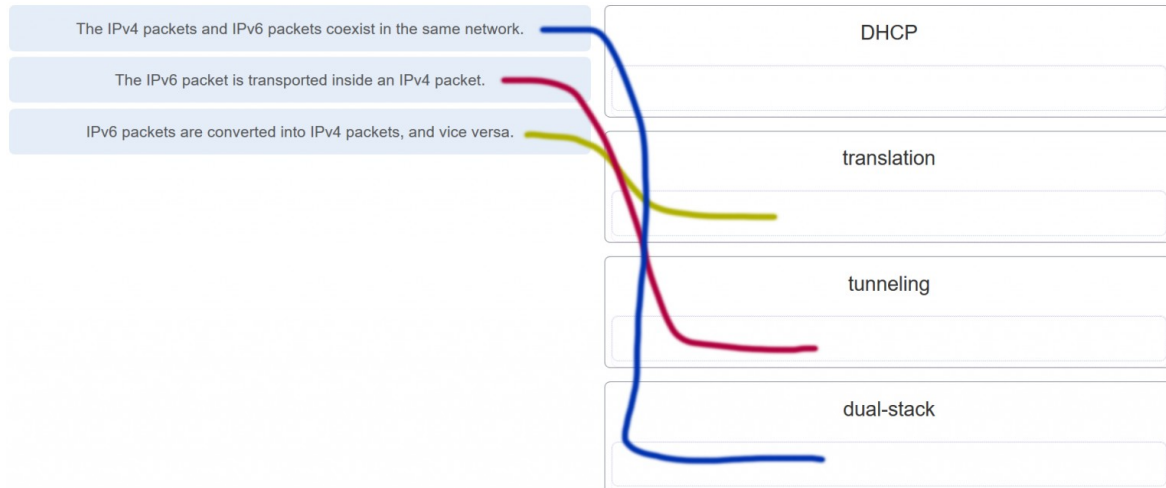
Which type of IPv6 address refers to any unicast address that is assigned to multiple hosts?

- unique local
- global unicast
- link-local
- **anycast**

Explanation: The anycast address is a unicast address that is assigned to multiple hosts. Anycast addresses are usually used to locate the nearest server of a specific type—for example, the nearest DNS or network time server. Assigning the same unicast address to more than one interface makes it an anycast address. You can have link-local, unique local, or global unicast anycast addresses. When you assign an anycast address to an interface, you must explicitly identify the address as an anycast address.

Question 15

Three methods allow IPv6 and IPv4 to co-exist. Match each method with its description. (Not all options are used.)



Place the options in the following order:

The IPv4 packets and IPv6 packets coexist in the same network.	dual-stack
The IPv6 packet is transported inside an IPv4 packet.	tunneling
IPv6 packets are converted into IPv4 packets, and vice versa.	translation

Question 16

Which protocol supports Stateless Address Autoconfiguration (SLAAC) for dynamic assignment of IPv6 addresses to a host?

- **ICMPv6**
- UDP
- DHCPv6
- ARPv6

Explanation: SLAAC uses ICMPv6 messages when dynamically assigning an IPv6 address to a host. DHCPv6 is an alternate method of assigning an IPv6 addresses to a host. ARPv6 does not exist. Neighbor Discovery Protocol (NDP) provides the functionality of ARP for IPv6 networks. UDP is the transport layer protocol used by DHCPv6.

Question 17

What is used in the EUI-64 process to create an IPv6 interface ID on an IPv6 enabled interface?

- **the MAC address of the IPv6 enabled interface**
- a randomly generated 64-bit hexadecimal address
- an IPv6 address that is provided by a DHCPv6 server
- an IPv4 address that is configured on the interface

Explanation: The EUI-64 process uses the MAC address of an interface to construct an interface ID (IID). Because the MAC address is only 48 bits in length, 16 additional bits (FF:FE) must be added to the MAC address to create the full 64-bit interface ID.

Question 18

Which IPv6 prefix is reserved for communication between devices on the same link?

- **FE80::/10**
- 2001::/32
- FDFE::/7
- FC00::/7
-

Explanation: IPv6 link-local unicast addresses are in the FE80::/10 prefix range and are not routable. They are used only for communications between devices on the same link.

Question 19

What type of IPv6 address is FE80::1?

- loopback
- **link-local**
- multicast
- global unicast

Explanation: Link-local IPv6 addresses start with FE80::/10, which is any address from FE80:: to FEBF::. Link-local addresses are used extensively in IPv6 and allow directly connected devices to communicate with each other on the link they share.

Question 20

Given IPv6 address prefix 2001:db8::/48, what will be the last subnet that is created if the subnet prefix is changed to /52?

- 2001:db8:0:f00::/52
- 2001:db8:0:8000::/52
- 2001:db8:0:f::/52
- **2001:db8:0:f000::/52**

Explanation: Prefix 2001:db8::/48 has 48 network bits. If we subnet to a /52, we are moving the network boundary four bits to the right and creating 16 subnets. The first subnet is 2001:db8::/52 the last subnet is 2001:db8:0:f000::/52.

Question 21

What are two types of IPv6 unicast addresses? (Choose two.)

- multicast
- **loopback**
- **link-local**
- anycast
- broadcast

Explanation: Multicast, anycast, and unicast are types of IPv6 addresses. There is no broadcast address in IPv6. Loopback and link-local are specific types of unicast addresses.

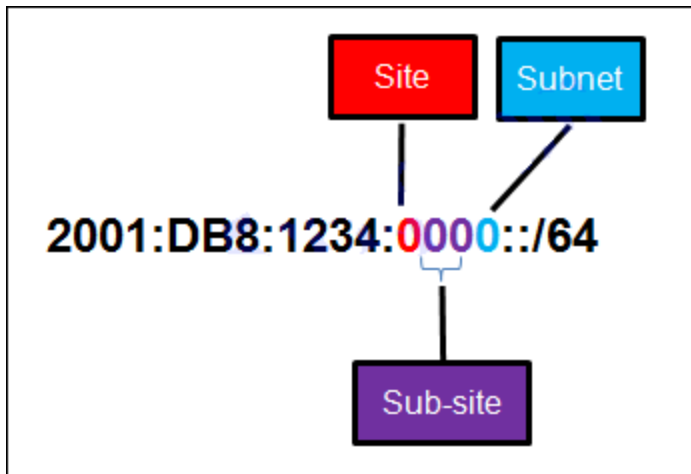
Question 22

Which service provides dynamic global IPv6 addressing to end devices without using a server that keeps a record of available IPv6 addresses?

- stateful DHCPv6
- **SLAAC**
- static IPv6 addressing
- stateless DHCPv6

Explanation: Using **stateless address autoconfiguration** (SLAAC), a PC can solicit a router and receive the prefix length of the network. From this information the PC can then create its own IPv6 global unicast address.

Question 23



Refer to the exhibit. A company is deploying an IPv6 addressing scheme for its network. The company design document indicates that the subnet portion of the IPv6 addresses is used for the new hierarchical network design, with the site subsection to represent multiple geographical sites of the company, the sub-site section to represent multiple campuses at each site, and the subnet section to indicate each network segment separated by routers. With such a scheme, what is the maximum number of subnets achieved per sub-site?

- 0
- 4
- **16**
- 256

Explanation: Because only one hexadecimal character is used to represent the subnet, that one character can represent 16 different values 0 through F.

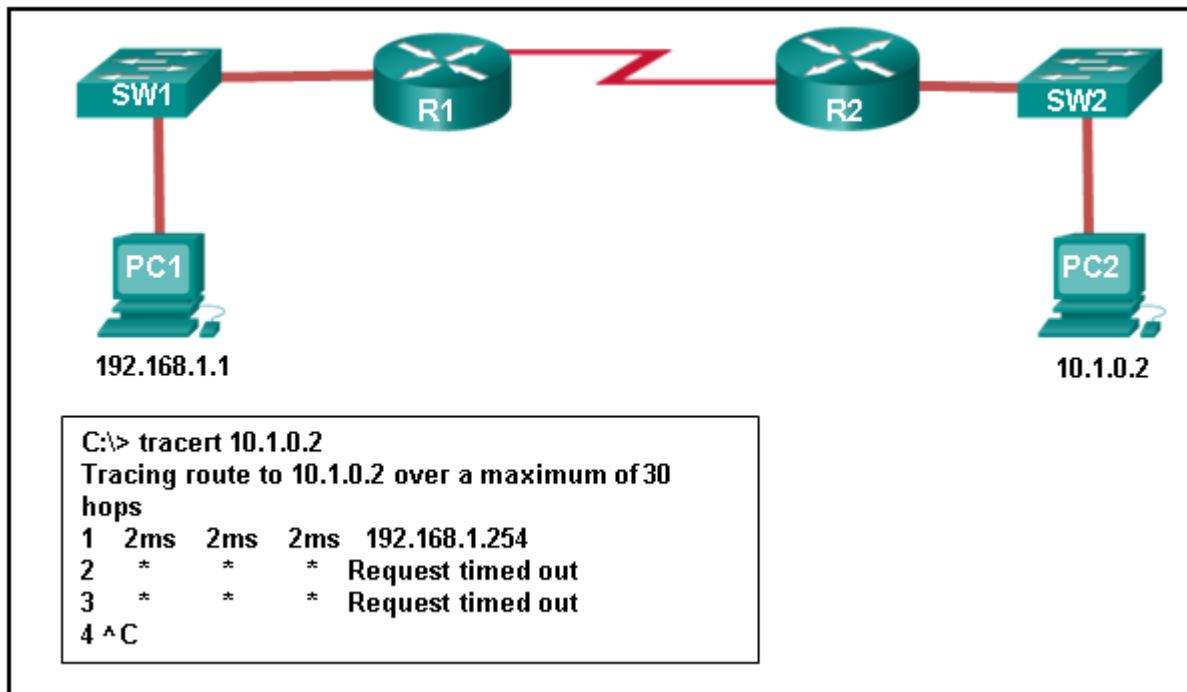
Question 24

Which ICMPv6 message is sent when the IPv6 hop limit field of a packet is decremented to zero and the packet cannot be forwarded?

- network unreachable
- **time exceeded**
- protocol unreachable
- port unreachable

Explanation: ICMPv6 uses the hop limit field in the IPv6 packet header to determine if the packet has expired. If the hop limit field has reached zero, a router will send a time exceeded message back towards the source indicating that the router cannot forward the packet.

Question 25



Refer to the exhibit. An administrator is trying to troubleshoot connectivity between PC1 and PC2 and uses the tracert command from PC1 to do it. Based on the displayed output, where should the administrator begin troubleshooting?

- PC2
- **R1**
- SW2
- R2
- SW1

Explanation: Tracert is used to trace the path a packet takes. The only successful response was from the first device along the path on the same LAN as the sending host. The first device is the default gateway on router R1. The administrator should therefore start troubleshooting at R1.

Question 26

What source IP address does a router use by default when the traceroute command is issued?

- the highest configured IP address on the router
- a loopback IP address
- **the IP address of the outbound interface**
- the lowest configured IP address on the router

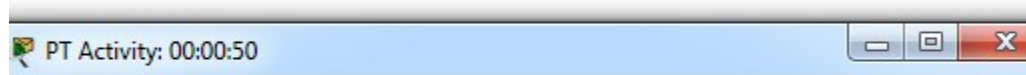
Explanation: When sending an echo request message, a router will use the IP address of the exit interface as the source IP address. This default behavior can be changed by using an extended ping and specifying a specific source IP address.

Question 27

Download PT Activity

Open the PT Activity. Perform the tasks in the activity instructions and then answer the question.

[Download PT Activity](#)



Open the command prompt on PC2 and use the **ipv6config** command to note the IPv6 address of PC2.

Open the command prompt on PC1 and trace the route to PC2.

What are the three IPv6 addresses displayed when the route from PC1 to PC2 is traced? (Choose three.)

Return to the assessment to answer the question.

What are the three IPv6 addresses displayed when the route from PC1 to PC2 is traced? (Choose three.)

- **2001:DB8:1:1::1**

- 2001:DB8:1:1::A
- 2001:DB8:1:2::2
- **2001:DB8:1:2::1**
- 2001:DB8:1:3::1
- **2001:DB8:1:3::2**
- 2001:DB8:1:4::1

Explanation: Using the **ipv6config** command on PC2 displays the IPv6 address of PC2, which is 2001:DB8:1:4::A. The IPV6 link-local address, FE80::260:70FF:FE34:6930, is not used in route tracing. Using the **tracert 2001:DB8:1:4::A** command on PC1 displays four addresses: 2001:DB8:1:1::1, 2001:DB8:1:2::1 , 2001:DB8:1:3::2, and 2001:DB8:1:4::A.

Question 28

Match each description with an appropriate IP address.

240.2.6.255	✓	a link-local address
169.254.1.5	✓	a loopback address
127.0.0.1	✓	an experimental address
198.133.219.2	✓	a public address

Explanation: Place the options in the following order:

127.0.0.1	loopback address
240.2.6.255	an experimental address
198.133.219.2	a public address
169.254.1.5	a link-local address

Question 29

What is the prefix length notation for the subnet mask 255.255.255.224?

- /25
- /26
- **/27**

- /28

Explanation: The binary format for 255.255.255.224 is 11111111.11111111.11111111.11100000. The prefix length is the number of consecutive 1s in the subnet mask. Therefore, the prefix length is /27.

Question 30

Which subnet would include the address 192.168.1.96 as a usable host address?

- 192.168.1.64/26
- 192.168.1.32/27
- 192.168.1.32/28
- 192.168.1.64/29

Explanation: For the subnet of 192.168.1.64/26, there are 6 bits for host addresses, yielding 64 possible addresses. However, the first and last subnets are the network and broadcast addresses for this subnet. Therefore, the range of host addresses for this subnet is 192.168.1.65 to 192.168.1.126. The other subnets do not contain the address 192.168.1.96 as a valid host address.

Question 31

A host is transmitting a broadcast. Which host or hosts will receive it?

- a specially defined group of hosts
- **all hosts in the same network**
- all hosts on the Internet
- the closest neighbor on the same network

Explanation: A broadcast is delivered to every host that has an IP address within the same network.

Alternative

- all hosts in the same subnet
- directly connected network devices
- one specific host
- the closest neighbor on the same network

Question 32

Which is the compressed format of the IPv6 address **fe80:0000:0000:0000:0220:0b3f:f0e0:0029**?

- **fe80::220:b3f:f0e0:29**
- fe80:9ea:0:2200::fe0:290
- fe80:9ea0::2020:0:bf:e0:9290
- fe80:9ea0::2020::bf:e0:9290

Alternative

Which is the compressed format of the IPv6 address **fe80:09ea:0000:2200:0000:0000:0fe0:0290**?

- **fe80:9ea:0:2200::fe0:290**
- fe80:9:20::b000:290
- fe80:9ea0::2020:0:bf:e0:9290
- fe80:9ea0::2020::bf:e0:9290

Question 33

A user issues a ping **2001:db8:FACE:39::10** command and receives a response that includes a code of 2 . What does this code represent?

- **beyond scope of the source address**
- communication with the destination administratively prohibited
- address unreachable
- no route to destination

Other case:

A user issues a ping **2001:db8:FACE:39::10** command and receives a response that includes a code of 2 . What does this code represent?

- host unreachable
- port unreachable
- network unreachable
- **protocol unreachable**

Explanation: When a host or gateway receives a packet that it cannot deliver, it can use an ICMP Destination Unreachable message to notify the source that the destination or service is unreachable. The message will include a code that indicates why the packet could not

be delivered. These are some of the Destination Unreachable codes for ICMPv4:

0 : net unreachable
1 : host unreachable
2 : protocol unreachable
3 : port unreachable

100%

You have scored **100%**.

Congratulations, you have passed the exam.

You have used 1 of 1 attempt(s).

Review Assessment

Here is how you performed in each of the Learning Objectives and Skills associated with this assessment.

IP Addressing.IPv4.Networks	100%
Network Basiscs.Connectivity.Utilities	100%
IP Addressing.IPv6. Addressing	100%